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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,598	07/28/2003	Joseph W. Daggett	FSI0041/US/3	4644

33072 7590 06/01/2006

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EXAMINER

EDWARDS, LAURA ESTELLE

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,598

Applicant(s)

DAGGETT ET AL.

Examiner

Laura Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 8-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Specification

The disclosure is objected to because of the following informality: on page 1, Applicants need to update the history of the previous application, 09/397714 to reflect --U.S. Patent No. 6,599,560--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 8-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 8, Applicants claim a system for coating a workpiece, however, there is no coating device or coating application means (i.e., a nozzle, a dispenser, etc.) claimed.

In claim 8, line 9, Applicants recite a process limitation of the workpiece being rotated, however, it is unclear how the workpiece is rotated because no structure has been claimed to enable rotation of the workpiece.

In claim 10, Applicants recite coating process parameters, however, none of the parameters can be determined from the structure recited in claim 8 because none of the structure is claimed to enable information to be obtained therefrom. For example, the first parameter includes a composition temperature, however, there is no composition temperature sensor recited in the claimed system. Respectively, there is no structure claimed for sensing spinner speed, no workpiece temperature sensor, no coating enclosure temperature sensor, no delay structure or timing delay structure, no variable speed motor to rotate the workpiece to cause acceleration of

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the workpiece, or spin duration timer. Therefore, it is unclear how such parameters would be determined with the system recited in claim 8.

In claim 11, Applicants recite “process timing delay” and it is unclear whether this is the same delay when referring to an “intra-station delay” as recited in claim 10. Clarification is necessary.

In claim 14, it is unclear how the information used to derive the output signal further comprising a correlation between coating thickness and the generated pressure signal constitutes a further structural limitation.

In claim 16, it is unclear how the type of material intended to be used in the system further structurally limits the system. Presently, no source or supply of photoresist is positively claimed in independent claim 8.

For claim 17, see the first response above to claim 8 and the response to claim 10.

For claim 20, see the response above to claim 16.

In claim 22, it is unclear how the workpiece being a semiconductor wafer further structurally limits the system.

In claim 23, it is unclear how pressure being determined during rotation of the workpiece further structurally limits the system as recited in claim 17.

For claim 24, see the first response to claim 8.

For claim 16, see the response to claim 23. Also, note that the system of claim 24, does not require spinner structure to enable rotation of the workpiece.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8, 12-14, and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Homma et al (US 5,777,300).

Homma et al teach a system for providing a coating film on a workpiece comprising a processing chamber (9); a coating enclosure (2) inside the processing chamber, wherein the workpiece is supported inside the coating enclosure during coating operations; a pressure sensor (21) positioned outside the coating enclosure; an elbow shaped pressure communicative conduit operatively coupling the pressure sensor to the interior of the coating enclosure such that a pressure signal generated by the pressure sensor at a time during which the workpiece is processed indicative of [barometric] pressure inside the coating enclosure; a control system (22) operatively coupled to the pressure sensor and adapted to control coating film thickness via controlling the pressure within the coating enclosure via information obtained from the pressure sensor (col. 5, lines 19-30). As noted in the citation by Homma et al, it is well established that the controller is in communication with the pressure sensor (21) and while feedback or information is generated and returned back to the controller, the controller further controls other instruments [governing the coating process] in the system.

With respect to claims 8 and 26 with respect to the process limitation of the workpiece being rotated. These claims have been given no patentable weight because no structure is claimed to provide a rotatable work support.

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Claims 8-11, 14-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsui (US 5,766,671).

Matsui et al teach a system for providing a coating film (i.e., photoresist) on a workpiece comprising a processing chamber (18, 20); a coating enclosure (14) inside the processing chamber, wherein the workpiece is supported inside the coating enclosure during coating operations; a pressure sensor (36) positioned outside the coating enclosure; a pressure communicative conduit (not numbered) extending from the sensor to CPU (40), the pressure sensor generating a pressure signal generated by the pressure sensor at a time while the workpiece (col. is coated indicative of [barometric] pressure inside the coating enclosure; a control system (46) operatively coupled to the pressure sensor and adapted to control coating film thickness via controlling the pressure within the coating enclosure via information obtained from the pressure sensor (col. 6, lines 31 to col. 7, lines 1-26).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 10, 11, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui (US 5,766,671) in view of Homma et al (US 5,777,300).

Matsui et al teach a system for providing a coating film (i.e., photoresist) on a workpiece comprising a processing chamber (18, 20); a coating enclosure (14) inside the processing chamber, wherein the workpiece is supported inside the coating enclosure during coating operations; a pressure sensor (36) positioned outside the coating enclosure; a pressure communicative conduit (not numbered) extending from the sensor to CPU (40), the pressure sensor generating a pressure signal generated by the pressure sensor at a time while the workpiece (col. is coated indicative of [barometric] pressure inside the coating enclosure; a control system (46) operatively coupled to the pressure sensor and adapted to control coating film thickness via controlling the pressure within the coating enclosure via information obtained from the pressure sensor (col. 6, lines 31 to col. 7, lines 1-26). Matsui is silent concerning the controlling of the coating process parameter of timing [intra-station] delay. However, it was known in the coating art, at the time the invention was made, to control the process parameter of timing delay in the spin coating of a substrate with a photoresist to minimize consumption of the photoresist as evidenced by Sanada (see col. 3, lines 32-67). In light of the cost savings benefit teachings of Sanada, it would have been obvious to one of ordinary skill in the art to incorporate into the controller in association with the other coating process parameters (i.e., coating temperature, spin speed, etc.) the coating process control parameter, process timing delay, in order to minimize the consumption of photoresist when coating the substrate.

Claims 12, 13, and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui (US 5,766,671) in view of Homma et al (US 5,777,300).

Matsui et al teach a system for providing a coating film (i.e., photoresist) on a workpiece comprising a processing chamber (18, 20); a coating enclosure (14) inside the processing chamber, wherein the workpiece is supported inside the coating enclosure during coating operations; a pressure sensor (36) positioned outside the coating enclosure; a pressure communicative conduit (not numbered) extending from the sensor to CPU (40), the pressure sensor generating a pressure signal generated by the pressure sensor at a time while the workpiece (col. is coated indicative of [barometric] pressure inside the coating enclosure; a control system (46) operatively coupled to the pressure sensor and adapted to control coating film thickness via controlling the pressure within the coating enclosure via information obtained from the pressure sensor (col. 6, lines 31 to col. 7, lines 1-26). Matsui is silent concerning an elbow shaped pressure conduit comprising a first end having an inlet positioned inside the coating enclosure and a second end coupled to the pressure sensor, the conduit having an elbow to inhibit egress of coating fluid into the conduit. However, it was known in the art, at the time the invention was made, to provide as a coating arrangement, an elbow shaped pressure conduit comprising a first end having an inlet positioned inside a coating enclosure and a second end coupled to a pressure sensor (21) as evidenced by Homma et al (see Fig. 1, lines 19-31). In light of the coating arrangement of Homma et al, it would have been obvious to one of ordinary skill in the art to provide in the Matsui system, an elbow shaped pressure conduit comprising a first end having an inlet positioned inside the coating enclosure and a second end coupled to a pressure sensor in so long as the pressure within the coating enclosure was accurately detect.

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Moreover, Matsui do not appear to be particular with respect to the exact location of the pressure sensor as evidenced by col. 7, lines 52-65, such that it would have been within the purview of one of ordinary skill in the art to incorporate the elbow conduit arrangement of Homma et al, with the pressure sensor outside of immediate contact with coating materials/chemicals used in association with the substrate to maintain a longer lifetime of the pressure sensor.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patent discloses the state of the art with respect to a coating apparatus including externally disposed pressure and temperature sensors: Gurer et al (US 6,254,936). The following patent discloses the state of the art with respect to a spin coater system designating various conventional coating process parameters including spin direction, spin speed, time cycles, temperature velocity, and so forth: Brytsche et al (US 5,685,908).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura Edwards whose telephone number is (571) 272-1227. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Laura Edwards
Primary Examiner
Art Unit 1734

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May 26, 2006